OA-Rehab: Designing a Personalized Exercise Program for People with Osteoarthritis

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We describe the design of a multi-media performance support system (PSS) based on the documented benefits of a personalized exercise program for people with arthritis, on the known value of self-efficacy and stages of change, and on principles of learning theory. The poster will show examples of incorporating motivational and cognitive principles into a PSS.

INTRODUCTION

Although regular exercise is an effective therapy for rehabilitation of persons with osteoarthritis (OA) [1], people with OA may not exercise for three reasons. First, primary care physicians seldom recommend therapeutic exercises for people with OA [2], second, booklets about exercise may not be tailored to individuals' impairments [3], and third, people may have difficulty maintaining exercise without increasing their self-efficacy [4], or without having the intervention tailored to their stage of change [5].

Effective multi-media presentations should incorporate principles of instructional design [6]. These include using advance organizers, involving the reader by using pre- or post questions, enhancing storage and retrieval through reminders, prompts, and summaries, meaningful presentations, and increasing interest and attentiveness through personalization [7]. Our intelligent PSS includes advising, teaching, doing, and reference functions by combining an intuitive interface with an expert system and a database.

METHOD

We selected a PC platform based on availability of software, expense, flexibility, and local expertise. Since our audience were to be older adults with limited if any computer expertise and possible visual handicaps, we decided to use a large, touch screen, and eliminate keyboard and mouse input.

The interface design was arrived at by examining other systems, by seeking advice from experts, and by group brainstorming sessions where we identified three main content ideas to repeatedly present to the user. We designed a supportive, social environment based on the demonstrated research effectiveness of Bandura's Social Learning theory, and from the literature on the value of social support in exercise maintenance. The program asks the client to perform tests for range of motion and strength, helps the client assign priorities to areas of improvement, and produces written instruction and an exercise videotape. The poster will illustrate examples of incorporating tests and assessments into a multi-media PSS.

References

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